

THE HIERARCHICAL FUNCTION OF PHONOLOGICAL CONTEXTS ON THE WEAKENING OF /S/ IN SPANISH

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1 Introduction

The segment /s/ is frequently realized as a glottal fricative [h] or is deleted in syllable-final positions in numerous dialects of Spanish. This phenomenon has been viewed by most of the linguists as the weakening of /s/. Since independent studies have shown that the major direction of change seems to be the same in all areas (Terrell 1979), it seems plausible to assume that the realization of glottal fricative and the deletion will develop in the same manner in different areas. In this study I take the assumption that the direction of change is consistent throughout various dialects. As a result data from different dialects which are presumably in different stages of development will facilitate in piecing together an explanation for the weakening process.

2 Proposal

What is proposed in this study is that the general force that regulates /s/ weakening is the hierarchical relationship between phonological environments instead of static phonological rules. What happens is that different phonological positions that undergo /s/ weakening form a hierarchy of strength. According to this scale (as shown in 1), the weakening of /s/ starts from syllable-final positions and extends gradually to intervocalic positions. Within syllable-final positions, word-final preconsonantal position is most likely to undergo weakening. The second is word-internal preconsonantal position. The third is absolute final position and the last word-final prevocalic position.

- (1)
- | | | |
|----------------|----------|----------------|
| Intervocalic | a. V#__V | ↑
Weakening |
| | b. V__V | |
| Syllable-final | c. __#V | |
| | d. __# | |
| | e. __C | |
| | f. __#C | |

In fact, this scale is also an integral part of a larger scale on consonant weakening and strengthening in Spanish dialects in general (Hwu 1994). According to the hierarchy of strength for Spanish (as indicated in 2), a segment when in context 1 will undergo strengthening more frequently than in context 2 and context 2 will undergo strengthening more steadily than 3 and so forth. On the other hand, a segment in context 10 will undergo weakening more frequently than in context 9 and so forth. Hence, syllable-initial weakening is treated as a generalization of syllable-final weakening.

- (2)
- | | | |
|------------------|---------------|----------------|
| Syllable-initial | 1. C (#) __ | ↑
Strong |
| | [α PA] [α PA] | |
| | 2. ##__ | |
| | 3. C#__ | |
| | 4. C__ | ↓
Weak |
| Intervocalic | 5. V#__V | |
| | 6. V__V | |
| Syllable-final | 7. __#V | |
| | 8. __## | |
| | 9. __C | |
| | 10. __#C | ↑
Weakening |

3 Previous theories

What most of the previous theories have proposed is that weakening is regulated by phonological contexts. Nevertheless they are discrete in nature. For instance, Hooper (1976) proposes that syllable-initial positions are strong positions suggesting that these positions are subject only to strengthening processes and syllable-final positions are weak positions, which means that only these positions will undergo weakening. However, the theory cannot account for the facts that syllable-initial consonants in Spanish may

weaken, and syllable-initial word-internal and syllable-initial word-initial positions behave differently. According to Foley (1977), certain contexts are stronger than others. Word-initial, post-nasal and post-tonic positions are strong positions and word-final, intervocalic, and post-atomic positions are weak. In Hock's view (1988), weakening has a strong tendency to occur in just two environments: medial intervocalic position and word- or syllable-final environment. On the other hand, Harris (1983) proposes a phonological rule to explain the /s/ weakening, in which the segment /s/ turns into a glottal fricative in rime positions:

$$(3) s \rightarrow h / \begin{array}{c} \text{---} \\ | \\ \text{R} \end{array}$$

However, this rule does not seem to be able to account for the fact that the glottal fricative is also found in syllable-initial position. For instance, in the fast speech a phrase such as *tienes espacio* is pronounced with the segment [h] at syllable-initial position: *tie.ne.[heh].pa.cio*. Nevertheless, as suggested by Harris (1983) and Hualde (1989), the solution is to order the rule to apply before the application of resyllabification:

Syllabification	tie.nes	es.pa.cio
Rule	tie.ne[h]	e[h].pa.cio
Resyllabification	tie.ne.[h]e[h].pa.cio	

Despite the proposals of the aforementioned theories, quantitative data show that different contexts reveal different degrees of weakening. Hence, any static phonological rule would oversimplify the phenomenon. In addition, quantitative studies also demonstrate that the /s/ weakening in Spanish in word-final prevocalic position is greatly affected by the stress carried by the following vowel.

4 Data

In this study I have gathered available quantitative data on /s/ weakening in different Spanish dialects. I have compared the frequencies of the variants in each phonological environment. The context with the highest frequency of a given process is considered to be the most favorable context for the process. Similarly, the context with the lowest frequency then is the least favorable context for the process. I have also assumed that once a segment is weakened, the weakening should be counted. It does not matter how far the weakening goes. I also assume that route of /s/ weakening follows this order: [s] -> [h] -> [ϕ]. Therefore, to reach the stage of [ϕ], a segment must have passed through

[h] stage. Hence the rate of the occurrence of the glottal fricative and the rate of the phonetically zero variant added up should indicate the degree of weakening.

5 Analysis

Assuming that /s/ goes through one single route on weakening, I find that the context that most favors weakening is almost always the word-final preconsonantal position since the rate of [h] (the sum of the frequency of the glottal fricative and that of the deletion on the surface: [h] = [h] + [ø]) in that position is consistently greater than any other contexts both at the initial stage and at the advanced stage of weakening. In other words, the retention of /s/ in this position is the lowest among all contexts. The following tables demonstrate data from different dialects. They in general corroborate the proposal.

Table 1.1 The Educated Spanish of San Juan, Puerto Rico (Terrell 1978)

	__C	__# C	__# V	__##
[s]	3%	2%	18%	40%
[h]	92%	73%	50%	27%
[ø]	5%	25%	31%	33%

Table 1.2 Puerto Rican Spanish (Terrell 1977)

	__C	__# C	__# V	__# V	__##
[s]	6%	4%	45%	16%	46%
[h]	89%	69%	32%	53%	22%
[ø]	5%	27%	23%	30%	32%

Table 1.3 San Juan, Puerto Rico (López Morales 1983)

	__C	__#C	__#V	__##
[s]	7.4%	5.8%	17.9%	10.5
[h]	80.8%	55.1%	41.3%	20.1%
[ø]	11.6%	39%	40.7%	69.2%

Table 1.4 Jíbaro Spanish, Puerto Rico (Hammond 1982)

	__C	__#C	__#V	__##
[s]	5.3%	5.2%	5.8%	5%
[h]	52.3%	55.3%	44.6%	28.7%
[ø]	42.4%	39.5%	49.6%	65.5%

Table 1.5 Cuban Spanish (Terrell 1975, 1977, 1979)

	__C	__#C	__#V	__##
[s]	3%	2%	16%	63%
[h]	97%	75%	50%	13%
[ø]	0%	23%	34%	24%

Table 1.6 Panamanian Spanish (Cedergren 1973, 1978)

	__C	__#C	__#V	__##
[s]	2%	5%	20%	34%
[h]	57%	45%	30%	16%
[ø]	41%	50%	49%	50%

Table 1.7 Spanish of El Tigre, Venezuela (Florían 1985)

	__C		__#C		__#V		__##	
	Colloq	Form	Colloq	Form	Colloq	Form	Colloq	Form
[s]	0%	63%	0%	58%	5%	74%	7%	75%
[h]	2%	13%	4%	6.5%	8%	5.5%	0%	0%
[ø]	98%	24%	96%	35.5%	87%	20.5%	93%	25%

Table 1.8 Dominican Spanish (Alba 1982, 1990)¹

	__C	__#V'	__#V''	__##
[s]	8	38	92.3	57
[h]	36.74	54	3	28.5
[ø]	55	8	4.6	14

Table 1.9 Spanish of Lima, Peru (Caravedo 1983)

	__C	__#V	__##
[s]	43.91	96.37	87.16
[h]	36.66	0.74	2.71
[ø]	12.06	0.55	4.02
[z]	1.62	0.74	0.93

Table 1.10 Valdivia, Chile (Cepeda 1990)

	C__C	V__\$C	V__#C	C__#V	V__#V	V__##
[S]high	15	1	3	40	16	16
middle	0	0	1	32	6	11
[h]high	-	90	59	-	47	21
middle	1	96	69	-	44	36
[ø]high	85	6	35	60	37	63
middle	92	3	28	63	49	52

¹ This data is obtained by combining the data of stressed words and unstressed words in Alba (1982).

Table 1.11 *Concepción, Chile* (Valdivieso & Magaña 1988)

	—C, —# C	—# V	—##
[s]	25.5	79.5	89.9
[h]	71.5	18.5	7.9
[ø]	2.9	2.0	2.2

I suggest that the second favorable context for weakening is preconsonantal word-internal position since when the sum of the frequency of glottal fricative and that of deletion (the rate of aspiration) is very low (close to 10%) in word-internal position (see table 2: Bolivia, Costa Rica, Guatemala, Col. (Bogotá)), the sum of the frequency of glottal fricative and that of deletion is even lower in absolute final and word-final prevocalic positions. On the other hand, there are cases in which the sum of the frequency of glottal fricative and that of deletion is very low in word-final positions (close to 10%) excluding preconsonantal position, whereas the sum of the frequency of glottal fricative and that of deletion in word-internal position is higher (table 2: Argentina, Chile, Peru, Uruguay). All of these facts suggest that preconsonantal word-internal position is the second favorable position for weakening. The following data taken from Lipski (1984, 1986a), which are examples of dialects undergoing a beginning stage of weakening (high retention of [s]), confirm this proposal:

Table 2 (Lipski 1984, 1986a)

	—C	—# C	—# V	—# V	—##
	[s] [h] [ø]	[s] [h] [ø]	[s] [h] [ø]	[s] [h] [ø]	[s] [h] [ø]
Argentina	12 80 8	11 69 20	93 7 0	94 6 0	78 11 11
Bolivia	91 9 0	72 23 5	99 1 0	97 3 0	94 4 2
Chile	7 92 1	4 88 8	90 10 0	76 22 2	63 33 4
Col.(Bogotá)	87 13 0	53 30 17	91 9 0	88 11 1	92 4 4
Costa Rica	92 8 0	69 29 2	98 2 0	98 2 0	96 4 0
Guatemala	93 7 0	69 30 1	100 0 0	100 0 0	93 3 4
Perú	53 47 0	21 71 8	94 6 0	91 9 0	91 8 1
Uruguay	20 79 1	4 88 8	98 2 0	93 7 0	85 13 2

The data in the above table also indicate that the frequency of weakening (the rate of glottal fricative and the rate of deletion) in absolute word-final position is higher than word-final prevocalic positions (except Bogotá, Colombia). The data of the dialects of Spain also corroborate this proposal (see table 3 on the next page for Barcelona, Madrid, and Murcia Spanish).

Table 3 (Lipski 1986a)

SPAIN	__C	__# C	__# V	__# V	__##
	[s] [h] [ø]	[s] [h] [ø]	[s] [h] [ø]	[s] [h] [ø]	[s] [h] [ø]
Barcelona	99 1 0	92 8 0	100 0 0	96 4 0	95 4 1
Cáceres	2 91 7	0 94 6	23 77 0	0 95 5	9 8 83
Granada	0 82 18	0 85 15	0 15 85	2 50 48	1 2 97
Las Palmas	2 85 13	0 89 11	75 25 0	0 92 8	2 17 81
Madrid	94 6 0	69 29 2	92 8 0	96 4 0	82 12 6
Murcia	1 70 29	0 80 20	36 36 28	38 41 21	18 11 71
Sevilla	0 95 5	0 91 9	69 10 21	1 46 54	5 2 93

However, this is not always the case in those dialects whose rate of the retention of [s] is about less than 50%:

Table 4 (Lipski 1984, 1986a)

	__C	__# C	__# V	__# V	__##
	[s] [h] [ø]	[s] [h] [ø]	[s] [h] [ø]	[s] [h] [ø]	[s] [h] [ø]
LATIN AMERICA					
Col.(Cartagena)	25 68 7	7 32 61	78 10 2	15 39 46	41 3 56
Cuba	3 96 1	2 75 23	48 28 25	10 53 37	61 13 26
Domin.Rep.	8 17 75	5 25 70	50 5 45	17 22 61	36 10 54
Ecu.(Guayaquil)	2 69 29	1 74 25	63 10 27	5 60 35	19 4 77
El Salvador	55 44 1	10 71 19	44 47 9	28 69 3	86 12 2
Honduras	63 34 3	19 58 23	90 10 0	61 38 1	83 15 2
Nicaragua	13 83 4	2 86 12	28 70 2	7 90 3	35 59 6
Panamá	13 52 35	4 48 48	62 13 25	9 67 26	25 21 54
Puerto Rico	3 92 5	4 69 27	45 32 23	16 53 31	46 22 32
Venezuela	7 40 53	3 47 50	57 26 17	15 52 33	38 16 46
SPAIN					
Cáceres	2 91 7	0 94 6	23 77 0	0 95 5	9 8 83
Granada	0 82 18	0 85 15	0 15 85	2 50 48	1 2 97
Las Palmas	2 85 13	0 89 11	75 25 0	0 92 8	2 17 81
Sevilla	0 95 5	0 91 9	69 10 21	1 46 54	5 2 93

The Puerto Rican Spanish studied by Terrell (1977) shows a similar result (see table 5 on the next page).

Table 5 Puerto Rican Spanish

	—C	—# C	—# V	—# V	—##
[s]	6%	4%	45%	16%	46%
[h]	89%	69%	32%	53%	22%
[ø]	5%	27%	23%	30%	32%

Data in table 4 and table 5 indicate that in the majority of cases the retention of [s] in absolute word-final position is smaller than the position preceding the stressed vowel but larger than the position preceding the unstressed vowel, although sometimes it exceeds both prevocalic contexts. A study comparing different speeches, as indicated in table 6 (Lipski 1983), does not show a consistent correlation between the absolute final position and the prevocalic word-final position regarding the weakening of /s/. There are instances, where the absolute final position has a higher rate of /s/ reduction than prevocalic word-final position, while the opposite cases are also found. However, the word-final preconsonantal position being the most favorable position for weakening and the word-internal position being the second favorable position for weakening are generally supported by the data.

Table 6 Index of /s/ reduction -[h]/[ø] (Lipski 1983b)

1. news; 2. musical variety; 3. sport commentary; 4. norm

	sC	s##	s#C	s#V	s#V
Argentina (1)	10	0	22	0	0
Argentina (2)	10	0	47	0	0
Argentina (3)	12	2	50	0	0
Argentina (4)	81	4	95	0	0
Chile (1)	1	0	7	0	0
Chile (2)	3	0	15	0	0
Chile (3)	50	0	54	0	0
Chile (4)	92	21	98	1	2
Cuba (1)	25	0	20	0	0
Cuba (2)	24	5	35	1	3
Cuba (3)	40	6	67	2	22
Cuba (4)	97	39	98	53	90
Cuba int. (1)	2	0	3	0	0
Cuba int. (3)	23	3	45	0	2
Cuba Am. (1)	6	0	4	0	0
Cuba Am. (2)	30	3	25	2	4
Cuba Am. (3)	33	2	29	2	5
Cuba Am. (4)	97	39	98	53	90
El Salvador (1)	9	0	26	0	0
El Salvador (2)	10	3	50	0	3
El Salvador (3)	17	4	56	0	5
El Salvador (4)	64	17	94	45	69

Weakening of /s/ in Spanish

(Table 6 continued.)

Honduras (1)	20	0	45	0	3
Honduras (2)	25	3	83	0	6
Honduras (3)	32	6	86	2	10
Honduras (4)	41	28	89	15	39
Nicaragua (1)	3	0	17	0	0
Nicaragua (2)	18	2	52	2	7
Nicaragua (3)	73	37	90	26	37
Nicaragua (4)	85	49	98	42	81
Nic. int. (1)	1	0	9	0	0
Nic. int. (3)	13	2	14	0	1
Panamá (1)	10	0	11	0	0
Panamá (2)	43	13	61	0	13
Panamá (3)	48	21	79	16	28
Panamá (4)	96	57	98	42	88
Paraguay (1)	3	0	17	0	0
Paraguay (2)	5	2	23	0	0
Paraguay (3)	12	2	47	0	0
Paraguay (4)	80	5	99	48	72
Puerto Rico (1)	4	0	5	0	0
Puerto Rico (2)	23	2	55	0	3
Puerto Rico (3)	45	7	75	2	15
Puerto Rico (4)	94	54	96	55	84
Rep. Dom. (1)	11	0	2	0	0
Rep. Dom. (2)	40	23	70	3	10
Rep. Dom. (3)	43	42	77	3	15
Rep. Dom. (4)	91	65	98	29	75
Venezuela (1)	2	0	3	0	0
Venezuela (2)	18	2	40	0	3
Venezuela (3)	20	2	53	3	10
Venezuela (4)	95	49	99	41	89

In view of the inconsistent behavior of the prevocalic and absolute final environments toward weakening processes, it seems difficult to reach to a conclusion as to whether the absolute final position or the prevocalic positions is the third favorable position for weakening. However, if we assume that the patterns of speech that a language demonstrates at the beginning stage of weakening are under the least influence from factors such as stress (such as data in table 2), the prevocalic position has to be viewed as the least favorable context for weakening.

With respect to the two prevocalic positions, several studies have already indicated that the position preceding the tonic vowel is more favorable for the retention of /s/ than the position preceding the atonic vowel (Terrell 1977a, 1978, Alba 1982). Data

in table 2 and table 4 corroborate this observation. There are several cases, where the rate of weakening of prevocalic position preceding the atonic vowel (in some cases including preceding the tonic vowel) has reached such a degree that exceeds the rate of weakening of the word-internal preconsonantal position and naturally the absolute final position. Those dialects include Honduran, Nicaraguan, Salvadoran and Panamanian Spanish as illustrated in table 4. This finding suggests that the following atonic vowel may sometimes contribute a great degree to the increase of the realization of glottal fricative.

6 Preliminary proposal of /s/ weakening

It has been established above that the word-final preconsonantal position is the most favorable position for weakening, word-internal preconsonantal position is the second and absolute final position the third. However, factors other than phonological also play a role in the weakening process. The following unstressed vowel may enhance the realization of [h] to such a degree that the prevocalic position becomes the second or the third favorable position for weakening. Therefore, I suggest that when the following stress comes into play the hierarchy may shape up slightly differently, nonetheless __#C always remains as the first candidate for weakening:

1.	a. __#C	2.	__#C	3.	__#C	4.	__#C
	b. __#V		__#V		__#V		__C
	c. __#V'		__C		__C		__#V
	d. __C		__#V'		__##		__##
	e. __##		__##		__#V'		__#V'

Among these four sets of hierarchy, 3 and 4 seem to represent the beginning stages of weakening. It seems that when the following unstressed vowel comes into play, the position preceding the unstressed vowel is pushed one or two steps upward in the hierarchy. At times, the word-final pretonic context moves forward along with the pretonic context. This seems to be true especially with the dialects that are registered for the extension of /s/ weakening to syllable-initial positions as we will see in the next section of this paper (e.g. Sampedrano (Honduras) Spanish, table 7; Honduran Spanish, table 11; Salvadoran Spanish, table 11; Tegucigalpa (Hondura) Spanish, High and Mid social classes, radio speech, table 12); Nicaraguan Spanish, High Social Class, table 14).

7 The extension of /s/ weakening to syllable-initial positions

Syllable-final contexts showed the most /s/ weakening in Sampedrano, Honduran Spanish (López Scott 1983):

Table 7

	__C	__#C	__#V	__##
[s]	56.9%	18.4%	47.3%	78.8%
[h]	36.9%	44.1%	47%	6.1%
[ø]	6%	37.4%	5.6%	15%

An interesting phenomenon occurring in this dialect is the extension of the weakening of /s/ to the syllable-initial position. Table 8 below summarizes the data obtained in syllable-initial position for the /s/ variation (López Scott 1983).

Table 8 Allophonic Distribution of Syllable-Initial /s/ in Sampedrano Spanish

	[s]	[h]	[ø]
V__V	72.7%	22.5%	4.6%
V'__V	79.6%	16.6%	3.6%
V__V'	92.2%	6.5%	1.2%
C__	100%	0%	0%
##__	96.3%	3.2%	0.3%
C#__	100%	0%	0%
V#__	86.3%	13%	0.6%

In all the syllable-initial environments examined, phonetic [s] is the norm. In fact, [s] was the only allophone observed in a postconsonantal position, either word-medially or word-initially. There were, according to López Scott, however, instances of consonant clusters in which both /s/ and the preceding consonant weakened (i.e. *entonces*² 'then' realized as [entðhes], [entðes], etc.). These cases were treated by López Scott as post-vocalic, in order to be consistent with the phonetic facts. The data in table 8 show that the intervocalic deletion rate was higher in word-medial position than in word-initial one, which corresponds to a historical fact that the word-medial intervocalic position is a position which undergoes weakening, whereas the word-initial position is one more suitable for strengthening than for weakening processes. Nevertheless, notice that when a stressed vowel follows the word-medial /s/, the rate of weakening is lower

² The weakening of /s/ in word such as *entonces* [entðhes] is also observed in several dialects such as Honduran Spanish (Lipski 1986b) and Spanish of the Dominican Republic (Jiménez Sabater 1975).

than that of word-initial postvocalic position. Note also that in absolute initial position the weakening rate is the lowest among the environments that exhibit the realization of weakening.

Another observation about the weakening of /s/ in syllable-initial position is discussed in Lipski (1985), which deals with Salvadoran and Honduran Spanish.

Table 9 Intervocalic /s/ in El Salvador

	[s]	[h]	[ø]
V__V'	89%	11%	0%
V__V'	95%	5%	0%
V#__V'	91%	9%	0%
V#__V'	99%	1%	0%

Table 10 Intervocalic /s/ in Honduras

	[s]	[h]	[ø]
V__V'	81%	18%	1%
V__V'	91%	9%	0%
V#__V'	79%	21%	0%
V#__V'	99%	1%	0%

Unlike López Scott's study, the location of the stress of the following vowel when /s/ is in word-initial position is taken into account in Lipski's study. Based on Lipski's data it seems that in intervocalic position the following stress is the main factor that constrains the weakening of /s/ and the word-boundary is the secondary factor. In the same study (Lipski 1985), the percentages of the weakening of syllable-final /s/ are also obtained:

Table 11

	__C	__#C	__#V'	__#V'	__##
	[s] [h] [ø]	[s] [h] [ø]	[s] [h] [ø]	[s] [h] [ø]	[s] [h] [ø]
Honduras	63 34 3	19 58 23	82 16 2	59 36 5	83 15 2
El Salvador	54 44 2	10 65 25	46 43 1	28 69 3	85 10 5

Comparing table 9, table 10, and table 11, we note that the weakening of /s/ is extending toward intervocalic position in both Honduran and Salvadoran Spanish. Notice that in Salvadoran Spanish the highest rate of /s/ retention among syllable-final positions is 85% whereas the lowest rate of /s/ retention among intervocalic positions is 89%. Notice also that in Honduran the highest rate of /s/ retention among syllable-final positions is 83% while the lowest rate of /s/ retention among intervocalic positions is 79%, suggesting that

syllable-initial intervocalic weakening constitutes the subsequent step of weakening following word-final weakening.

Another study of Honduran Spanish has also manifested the weakening of intervocalic /s/ (Lipski 1986b). The following table displays the realization of /s/ in the capital city of Tegucigalpa, which is located in the department of *Francisco Morazán*.

Table 12

	_C			_# C			_# V'			_# v			_##		
	[s]	[h]	[ø]	[s]	[h]	[ø]	[s]	[h]	[ø]	[s]	[h]	[ø]	[s]	[h]	[ø]
high	77.6	21.2	1.2	21.8	67.2	10.9	66.7	33.3	0	34.1	58.5	7.3	80.0	16.7	3.3
mid	60.2	33.2	6.6	14.0	71.3	14.7	60.3	39.7	0	29.9	60.5	9.6	63.7	24.6	11.7
low	37.9	40.2	21.8	11.2	52.0	36.7	57.1	28.6	14.3	25.9	50.0	24.1	53.3	35.6	11.1
radio	70	28	2	35	65	0	96	4	0	83	17	0	98	2	0

	V#_V'			V#_v			V_V'			V_v		
	[s]	[h]	[ø]	[s]	[h]	[ø]	[s]	[h]	[ø]	[s]	[h]	[ø]
high	100	0	0	90.2	9.8	0	100	0	0	96.6	3.4	0
mid	100	0	0	82.3	17.7	0	93.4	6.6	0	95.2	4.8	0
low	100	0	0	74.3	25.7	0	90.9	9.1	0	95.4	4.6	0
radio	100	0	0	96	4	0	97	3	0	96	4	0

The data indicate that the weakening of /s/ is spreading toward intervocalic position both word-medially and word-initially. The frequency of weakening in word-initial intervocalic position is higher here than word-internal intervocalic position. Lipski points out that there appears to be a process of lexical spread of aspiration of word-initial /s/. The following table shows the frequency of total words pronounced with initial /s/ + V as [h]:

Table 13

se	11.7	señor/señora	3.6
centavo	10.0	semana	2.5
situación	9.0		
cincuenta	4.7		
sesenta	4.7		
setenta	4.8		
San Pedro	4.5		
central	4.1		

In view of this observation, it is conceivable that the rate of weakening of word-initial intervocalic position is higher than word-internal intervocalic position. An additional observation by Lipski on this dialect is that the aspiration of internal intervocalic /s/ is particularly common at morpheme boundaries (*presupuesto* [prehupuehto], *desempleo* [dehempleo]) or in combinations which have the superficial shape of some sort of prefix (*licenciado* [lihensiaŋo], *presidente* [prehiðente]). A similar observation is also found in Andalusian dialects (Hualde 1989, 1990). There are nonetheless, cases where the intervocalic /s/ is weakened, such as *necesita*, etc., although Lipski suspects that this may come from a process of haplology or dissimilation, eliminating the combination of two [s]'s in close succession.³ Up to the moment, it seems reasonable to propose that the extension of /s/ weakening reaches intervocalic position. First it affects the word-internal premorphemic position and later it generalizes to include the intervocalic word-internal position regardless of the following morpheme boundary. This seems to be a reasonable proposal considering that in table 1.10, the Spanish of Valdivia, Chile, manifests that in word-internal preconsonantal context, the context preceding the morpheme boundary is slightly lower in the retention of [s] than the context that does not precede the morpheme boundary.

The neighboring Nicaraguan Spanish also manifests weakening of the intervocalic /s/. However, the rate remains very low there in contrast with the speech patterns of neighboring Honduras:

Table 14 Realizations of /s/ in Nicaraguan Spanish (Lipski 1989)

	_C			_# C			_# V'			_# ʔ			_##		
	[s]	[h]	[ø]	[s]	[h]	[ø]	[s]	[h]	[ø]	[s]	[h]	[ø]	[s]	[h]	[ø]
high	13.4	83	3.7	1.9	86	12.1	27.7	70.2	2.1	7.4	90.4	2.2	35	59	6
mid	12.6	85.8	1.6	1.4	86.1	12.5	29	65.8	5.3	4.8	88.4	6.8	25	68	7
low	11.4	80.9	7.7	1.4	78.7	19.8	22.6	62.8	13.1	1.6	90.2	8.2	8	77	15

	V#_V'			V#_ʔ			V_V'			V_ʔ		
	[s]	[h]	[ø]	[s]	[h]	[ø]	[s]	[h]	[ø]	[s]	[h]	[ø]
high	100	0	0	100	0	0	99.3	0.7	0	99	1	0
mid	100	0	0	100	0	0	99.1	0.9	0	98.6	1.4	0
low	100	0	0	98.7	1.3	0	95.7	4.3	0	95.5	4.5	0

³ As pointed out by Hualde (1990) onset /s/ may be aspirated: *si señor* [hi.he.no], *basura* [bahúra], which are registered in dialects spoken in areas of southern Spain, New Mexico and Colombia.

As shown in table 14 word-internal intervocalic position has just started the weakening process and in word-initial intervocalic position the realization of [s] is categorical.

In Hammond's study of the fast speech of Cuban Spanish (1980) the weakening of /s/ in syllable-initial position is noticed as well. In all his recordings of data, there were 25 cases of weakening occurring in syllable-initial position. The examples demonstrated by him mostly occur in word-internal intervocalic position: *eso* [éh], *pasado* [paháðo], *desesperaste* [deheperáhte], except: *enseñando* [enhenándo], where as the case of *entonces* in Honduran Spanish ([entóhes], [entóhes]) the preceding nasal is weakened as well. He also demonstrates a few cases of word-initial weakening: *susto* [húhto], *cesto* [héhto]. López Chávez' (1977) study about the Spanish of La Cruz, Mexico, [h] is found frequently before a voiced consonant (81%), before a vowel (52%), before a voiceless consonant (37%) and to a lesser degree in absolute final position (19%). However, the same phenomenon is also registered, although to a much lesser degree, in intervocalic, absolute initial and after *r* positions.

Based on these observations on /s/ weakening in a syllable-initial position, it is plausible to propose that the weakening process starts in the syllable-final position and later extends to the syllable-initial position. The extension of weakening of /s/ in syllable-initial position will first spread to word-internal intervocalic position, then to word-initial intervocalic position when the stress factor is excluded. So far, there is no formal report of /s/ weakening in postconsonantal and absolute-initial position, which suggests that these are the least favorable positions for undergoing the weakening process.⁴

From the above observations, we notice that within intervocalic contexts, stress plays an important factor. Unlike syllable-final weakening, where the following unstressed vowel tends to facilitate the occurrence of weakening, in intervocalic contexts the following stressed vowel tends to make the segment resistant to weakening. Hence, at times the hierarchy of weakening in an intervocalic context may shape up differently:

Intervocalic context

- | | |
|------------|------------|
| a. V__ \$V | a. V__ \$V |
| b. V__ V~ | b. V__ V~ |
| c. V__ V~ | c. V#__ V~ |
| d. V#__ V~ | d. V__ V~ |
| e. V#__ V~ | e. V#__ V~ |

⁴ There are, however, some lexicalized cases as shown in table 13.

There seems to be an explanation for this behavior of stress since the consonant in intervocalic position is normally syllabified onto the onset position forming a syllable with the following vowel. It seems that the following stressed vowel makes it more stable in the syllable-initial position and hence more adjoined to the following vowel resulting in less propensity to undergo weakening. Conversely, a syllable-final prevocalic consonant is syllabified onto the preceding vowel before the resyllabification. Hence, the following unstressed vowel facilitates its stability with the preceding vowel resulting in more propensity to undergo weakening. It seems also that when the syllable-final prevocalic /s/ has been influenced by the following unstressed vowel to a certain degree, the intervocalic positions simply turn into a context favorable for weakening, and to such a degree that surpass the absolute final position while at the same time the syllable-initial intervocalic weakening (word-initial) is initializing.

This study has shown that the weakening of /s/ is regulated by the strength scale consisted of different contexts. The lower a context on the scale, the higher the weakening. It also shows that /s/ weakening is not merely limited to syllable-final positions as is commonly believed. Its extension to other phonological contexts such as intervocalic positions strengthens the continuous nature among different phonological environments. It also explains why intervocalic contexts are sometimes suggested to be positions susceptible to weakening when in reality they are affected only as the result of a generalization of the weakening.

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